

process repeats. If, however, another process is not to be executed, as determined in decision block 1110, processing ends in block 1112.

Project Maintenance Process

Referring to FIG. 12, a project maintenance process is illustrated and begins in block 1202. Thereafter, the user can run a SQL Delete process in block 1204, a SQL Update process in block 1206, an Index process in block 1208, an Archive Project process in block 1210, and an Un-Archive process in block 1212. After the completion of the selected process, the user can execute another process as determined in decision block 1214. If another process is to be executed, processing loops back and the above described process repeats. If, however, another process is not to be executed, as determined in decision block 1214, processing ends in block 1216.

Communication Between External Applications and Processing Agents

Referring now to FIG. 13, the communication process between an external application 1302, which can be web-based, and a processing agent 1304 is illustrated. The external application 1302 establishes a connection 1308 with the ServerLookupAgent 1306 using a known port number assigned to the ServerLookupAgent 1306. The external application 1302 then sends a port number request 1310 for a client specific InteractiveServerAgent 1314 to the ServerLookupAgent 1306. The ServerLookupAgent 1306 sends a response 1312 that contains the port number for the requested client specific InteractiveServerAgent 1314 to the external application 1302. Thereafter, the external application 1302 sends all future requests 1316 to the InteractiveServerAgent 1314. When the InteractiveServerAgent 1314 receives a request 1316, it sends a "ticket" request to the agent manager 1320 so that the InteractiveServerAgent 1314 can communicate with the processing agent 1304. The agent manager 1302 gets the processing agent 1304 ready to "speak" with the InteractiveServerAgent 1314 and then sends the ticket 1322 to the InteractiveServerAgent 1314. The InteractiveServerAgent 1314 then redeems the ticket and begins speaking with the processing agent 1304 via requests 1324. The processing agent 1304 sends the responses 1326 back through the InteractiveServerAgent 1314, which then forwards those responses 1328 to the external application 1302.

Now referring also to FIG. 14, a block diagram of the InteractiveServerAgent 1314 process is illustrated and begins in block 1402 when the InteractiveServerAgent 1314 is launched. The InteractiveServerAgent 1314 requests an open socket connection to the ServerLookupAgent 1306 in block 1404, which is supplied by the operating system. The InteractiveServerAgent 1314 then registers the port number corresponding to the open socket connection and client name with the ServerLookupAgent 1306 in block 1406. Thereafter, the InteractiveServerAgent 1314 processes all incoming requests 1316 and responses 1326 to and from the external application 1302 and the appropriate processing agent 1304. If an incoming request 1316 has not been received, as determined in block 1408, and an incoming response 1326 has not been received, as determined in block 1410, the InteractiveServerAgent 1314 is not to be terminated, as determined in block 1412, the process loops back to decision block 1408 and continues to look for incoming requests 1316, incoming responses 1326 or an instance termination signal.

Whenever an incoming request 1316 is received, as determined in decision block 1408, the request 1316 is parsed using the agent manager 1320 in block 1414 and then passed to the appropriate processing agent 1304 in block 1416. The process then continues to look for incoming requests 1316, incoming responses 1326 or an instance termination signal as previously described. Similarly, whenever an incoming response 1326 is received, as determined in decision block 1410, the response 1326 is passed to the external application 1302 in block 1418. The process then continues to look for incoming requests 1316, incoming responses 1326 or an instance termination signal as previously described. If an instance termination signal is received, as determined in decision block 1412, the InteractiveServerAgent 1312 unregisters the port number and client name with the ServerLookupAgent 1306 in block 1420, closes the socket connection to the ServerLookupAgent 1306 in block 1422 and terminates the instance of the InteractiveServerAgent 1312 in block 1424. Note that the InteractiveServerAgent 1312 runs continuously until the instance or thread of the InteractiveServerAgent 1312 is terminated. Typically, such a termination only occurs when the InteractiveServerAgent 1312 is taken down by hand.

As previously described, the ServerLookupAgent 1306 and InteractiveServerAgent 1312 allow multiple external applications 1302 to simultaneously connect with any client within the system. Any client in the system that desires to support this interactive interface will run an instance of the InteractiveServerAgent 1312. Each client will also run Agent instances for the various interactive functions it wishes to provide. Note that the client does not have to provide all possible functions or services. Accordingly, the set of processing Agents that are available are defined in the client's configuration file. Moreover, each agent participating in the interactive interface is designed to handle many requests from any external application 1302.

Although preferred embodiments of the invention have been described in detail, it will be understood by those skilled in the art that various modifications can be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. An apparatus for managing data comprising:
 - a first database for storing system data;
 - a second database for storing client data;
 - at least one database server to control the first database and the second database;
 - an external application;
 - a first set of objects linked to the first database through the database server;
 - a second set of objects linked to the second database through the database server;
 - an interactive manager linked to the first set of objects and the external application;
 - a set of minions linked to the second set of objects; and
 - an agent manager linked to the interactive manager, the first set of objects and the set of minions.
2. The apparatus as recited in claim 1, wherein the client data is marketing data.
3. The apparatus as recited in claim 1, wherein the interactive manager is a first agent process and the agent manager is a second agent process.
4. The apparatus as recited in claim 3, wherein each agent process further comprises:
 - an agent;